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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/859,701	05/16/2001	Benjamin P. Warner	S-94,661	4132
35068	7590	06/03/2004	EXAMINER	
UNIVERSITY OF CALIFORNIA LOS ALAMOS NATIONAL LABORATORY P.O. BOX 1663, MS A187 LOS ALAMOS, NM 87545			DAVIS, DEBORAH A	
			ART UNIT	PAPER NUMBER
			1641	

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/859,701

**Applicant(s)**

WARNER ET AL.

**Examiner**

Deborah A Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2-17-04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Applicant's response to the Office Action mailed December 30, 2003 is acknowledged. Claims 1-10 are pending with claim 1 being currently amended.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Pirrung et al (WO 90/15070).

Pirrung et al teaches a method and device for preparing desired sequences on a substrate at known locations wherein bound material of the substrate is exposed to irradiation (pg. 10, lines 1-35) so as to activate material and permit binding (see abstract). The substrate has a variety of uses such as screening large numbers of peptides or receptors, wherein receptors are labeled with fluorescent markers for detection. Other applications of the invention include doping of organic material in the substrate (pg. 5, lines 14-36). In an alternative embodiment the surface may comprise of cage binding members that are capable of immobilizing receptors in predefined regions of a substrate for selective activation that allow receptors that have differential affinity for one or more ligands to react (pg. 55, lines 30-37 and pg. 56, lines 1-11). A specific binding substance having a strong binding affinity for the binding member and a

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strong affinity for the receptor or a conjugate of the receptor may be used to act as a bridge between binding members and receptors if desired. The method uses a receptor prepared such that the receptor retains its activity toward a particular ligand (pg. 56 lines 30-36). According Pirrung et al, receptors used in this method could be organic compounds such as polymers (oligomer), nucleic acids, peptides, drugs, cellular membranes, cells, etc. (pg. 11, lines 7-24). The binder molecule can be selected from the group consisting of agonists and antagonists for cell membrane receptors, oligonucleotides, nucleic acids, proteins, antibodies, etc. (pg. 9, lines 30-37).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pirrung et al in view of Weinberg et al (USP#6,030,917).

The teachings of Pirrung et al are set forth and is silent with respect to the binder being a metal ion.

However, Weinberg et al teaches methods of screening and characterization of libraries of organonometallic compounds which can be used as catalysts and therapeutic agents (see abstract). Ancillary ligand-stabilized metal complexes are also

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useful as catalysts for reactions such as oxidation, reduction, hydrogenation, polymerization, carbonylation and other reactions.

It would have been obvious to one of ordinary skill in the art to use the metal ion binder of Weinberg et al in the method and device for preparing desired sequences on a substrate as taught by Pirrung et al to screen for therapeutic agents and catalysts that are useful in oxidation, reduction and other useful reactions.

### ***Response to Arguments***

6. Applicant's arguments filed February 17, 2004 have been fully considered but they are not persuasive:

7. Applicant argues that Pirrung et al does not describe irradiating the substrate with x-rays after it has been exposed to a binder. Applicant contends that the instant method involves irradiating the substrate after it has been exposed to a binder to induce x-ray fluorescence signal from any receptor where binding has occurred and then detecting the signal. Applicant further contends that Pirrung et al does not realize that fluorescent markers are not necessary to observe fluorescence if X-ray radiation were used as an excitation source, as applicant teaches in the instant claim 1.

This argument is acknowledged but is not found persuasive because the substrate of Pirrung et al is irradiated to remove protecting groups that interfere with binding activity. After removing protecting groups, the substrates are exposed to one or more receptors and screened for biological (binding) activity. The biological activity is analyzed by photon detection (x-ray radiation), autoradiographic or visible light

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techniques to induce a signal (page 5, lines 14-30). Therefore, not only does Pirrung et al teaches potential binders that are tagged and detected through visible light, but potential binders are also detected through photon excitation (X-ray) and autoradiographic techniques.

8. Applicant argues that claim 1 is allowable and therefore dependent claims 2-8 and 10 should be allowable.

This argument is acknowledged but not found persuasive because claim 1 remains rejected based on arguments set forth above.

9. Applicant argue that the combination of Pirrung et al and Weinberg et al does not teach a method of preparing a library of receptors exposed to at least one potential binder and detecting binding between the receptors and potential binders using X-rays to induce and detect X-ray fluorescence signals to indicate that binding between a receptors and a binder has occurred.

This argument is acknowledged but not found persuasive because it is the Examiner's position that the combination of Pirrung et al in view of Weinberger et al teaches the instant invention. Examiner directs applicant's attention to the arguments set forth above and the rejection of claim 9 which was combined with the reference of Pirrung et al and relied on for its teaching of metal ion binders which has the advantage using the binders to prepare desired sequences on a substrate. Also, according to the specification, receptors are selected from a broad range of groups including amino acids and nucleic acids among others. Based on the arguments aforementioned above, this rejection is maintained and made final.

***Conclusion***

**10. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah A Davis whose telephone number is (571) 272-0818. The examiner can normally be reached on 8-5 Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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May 24, 2004



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05/31/04